

REMARKS

Applicants respectfully request reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claims 1, 3, 7-10, 13-18, and 24-26 have been amended. Claims 2, 11-12, 22, and 23 have been canceled. Claims 1, 3-10, 13-21, and 24-28 are now pending in this application. Applicants thank Examiner for recognizing that claims 27 and 28 are allowable. Applicants also thank Examiner for recognizing that claims 3-8 are allowable if rewritten in independent form including all of the limitations of the base claim. Claim 3 has been rewritten in independent form including all of the limitations of the base claim. Claims 9, 10, and 13-15 have been amended to depend from claim 3. Claims 16 and 17 depend from claim 15. Claims 24 and 25 have been amended to depend from claim 17. As a result, Applicants respectfully request allowance of claims 3-10, 13-17, 24, and 25.

I. Review of the Specification

On page 2 of the Office Action, Examiner states that use of the term “droop sharing control” as used in claims 17 and 18 “sounded odd.” Applicants, however, wish to point out that “droop sharing control” is further described in the claim language as “a droop sharing control that ensures current sharing between a plurality of modular power stages under constant voltage operation.” Exemplary embodiments of “droop sharing control” are described at least in paragraphs [0047] and [0048] of the specification. As a result, Applicants respectfully state that such term usage is acceptable.

II. Rejection of Claims 1, 2, and 9-26 under 35 U.S.C. § 102(b)

On page 2 of the Office Action, claims 1, 2, and 9-26 were rejected under 35 U.S.C. § 102(b) as being anticipated by one of U.S. Patent No. 6,297,616 (Kubo) and U.S. Patent No. 6,664,762 (Kutkut). Applicants respectfully traverse this rejection because Kubo and Kutkut fail to disclose, teach, or suggest all of the claim limitations as recited in claims 1 and 18. Additionally, Kutkut is not a prior art reference under 35 U.S.C. § 102(b). Kutkut was published on February 27, 2003, and issued December 16, 2003. The present application claims priority to

U.S. Provisional Application No. 60/458,816, filed March 28, 2003. As a result, Kutkut did not publish or issue more than one year prior to the earliest priority date of the present application. Therefore, Kutkut is not a prior art reference under 35 U.S.C. § 102(b). Applicants reserve the right to swear behind Kutkut as a prior art reference under 35 U.S.C. § 102(a) or 102(e) and/or to show that Kutkut is not “by others” or “by another,” respectively.

Claim 1 recites:

a base module providing DC power charging voltage, the base module including a power converter and providing output voltage for charging a battery, wherein each base module includes a transformer, an inverter and a rectifier;
a master controller that interfaces with a plurality of the base modules to regulate power delivered by each base module to charge a battery, wherein at least two of the plurality of base modules can be connected in parallel and regulated to charge the same battery.

Claim 18 recites:

an inverter coupled to a rectifier circuit, the inverter having as its input an input voltage, the rectifier circuit having as its output a battery charging voltage;
an intermediate high frequency transformer intermediate the inverter and the rectifier to convert alternating current (AC) voltage from the inverter to a lower voltage input to the rectifier;
a system controller that interfaces with a plurality of the modular power stages and regulates power delivered by the plurality of modular power stages, wherein at least two of the plurality of modular power stages can be connected in parallel and regulated to charge the same battery.

On page 2 of the Office Action dated 1/10/2006, the Examiner states:

Both references disclose a battery charger having, *inter alia*, a plurality of batteries being charged through a high frequency transformer. A controller regulates power delivered to each of the battery module.

Kubo and Kutkut, however, fail to disclose, teach, or suggest a base module or modular power stage that includes a transformer, an inverter, and a controller that interfaces with a plurality of base modules/modular power stages such that “at least two of the plurality of base modules can be connected in parallel and regulated to charge the same battery.”

Kubo discloses

A charge and discharge apparatus for electric power storage means has an AC power source, a transforming apparatus, which comprises a primary winding connected to the AC power source, and plural secondary windings, and plural electric power converters comprising plural AC sides, respective ones of which are connected to a respective one of the plural secondary windings, and plural DC sides, respective ones of which are connected to a respective one of the plural electric power storage means.

(Kubo, Abstract). Kubo also states that “the output of the AC power source 1 is connected to the primary side of a transformer 2, and the transformer 2 has n secondary windings 201, 202, and 203 for outputs.” (Kubo, Col. 4, lines 56-59; see Fig. 1). Kubo further states:

the current at the secondary side of the transformer can be controlled simultaneously as a unit by controlling the full bridge converter 104 so that the current at the primary side of the transformer coincides with a predetermined current reference. The switches Y11, Y21, Y31, for shunting the outputs of the rectifying diode bridges 311, 321, 331, and the switches Y12, Y22, Y32, for separating the connection with the respective batteries 4, 5, 6, are provided in respective secondary circuits.

(Kubo, Col. 4, lines 56-59; see Fig. 1). Therefore, as shown in Figs. 1, 6, 8, 9, 11, 12, 15-17, 20-22, 25, and 27, Kubo describes a single converter 104, 42 (inverter) that controls a plurality of secondary circuits. Thus, Kubo fails to disclose, teach, or suggest at least the limitations “a base module includes a transformer, an inverter, and a rectifier” “wherein at least two of the plurality of base modules can be connected in parallel and regulated to charge the same battery” as required by claim 1. Similarly, Kubo fails to disclose, teach, or suggest at least the limitations of a modular power stage comprising “an inverter coupled to a rectifier circuit,” and “an intermediate high frequency transformer intermediate the inverter and the rectifier” “wherein at

least two of the plurality of modular power stages can be connected in parallel and regulated to charge the same battery” as required by claim 18.

Kutkut states that a “high voltage battery charger … includes a plurality of series-connected or parallel-connected low-voltage output stages.” (Kutkut, Col. 7, lines 32-34).

Kutkut further states:

A multi-winding high frequency transformer 32, with a primary 33 and multiple secondaries 34 coupled to the primary, is used to supply the output stages. The output stages can be series-connected, as shown in FIG. 3, or parallel-connected, as shown in FIG. 4, to realize the desired output voltage and current level.

Although a single transformer with multiple secondaries is preferred, multiple transformers may be utilized, each with a single primary and one or more secondaries. For both configurations, AC input power from an AC source (e.g., AC power mains) is supplied to input terminals 35. The AC power is converted to a DC voltage on DC bus lines 36 by a rectifier 38 (e.g., a full bridge of diodes) and a filter capacitor 39 to form a DC source, and the voltage on the DC bus lines 36 is inverted to an AC voltage and then applied to the primary 33 of the transformer 32 by a buck-based DC to AC converter (inverter) 41.

(Kutkut, Col. 7, lines 39-59; see Figs. 1). Therefore, as shown in Figs. 3, 4, 5, 8, 9, and 11-15, Kutkut describes a single converter (inverter) 41 that controls a single or a plurality of secondary circuits. Thus, Kutkut fails to disclose, teach, or suggest at least the limitations “a base module includes a transformer, an inverter, and a rectifier” “wherein at least two of the plurality of base modules can be connected in parallel and regulated to charge the same battery” as required by claim 1. Similarly, Kutkut fails to disclose, teach, or suggest at least the limitations of a modular power stage comprising “an inverter coupled to a rectifier circuit,” and “an intermediate high frequency transformer intermediate the inverter and the rectifier” “wherein at least two of the plurality of modular power stages can be connected in parallel and regulated to charge the same battery” as required by claim 18.

As a result, neither Kubo nor Kutkut disclose, suggest, or teach all of the limitations of claims 1 and 18. An anticipation rejection cannot be properly maintained where the reference

used in the rejection does not disclose all of the recited claim elements. Therefore, Applicants respectfully request withdrawal of the rejection of claims 1 and 18. Applicants respectfully traverse any arguments posed by Examiner relative to claims 19-21 and 26 as they are allowable for at least the reasons outlined above relative to claims 1 and 18. Therefore, Applicants respectfully request withdrawal of the rejection of claims 1, 18-21, and 26.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested. The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 50-2350. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 50-2350. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 50-2350.

Respectfully submitted,

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